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Semantic Interference in Aging

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Introduction

Semantic interference is a behavioral phenomenon according to which target items are named more slowly when belonging to the same semantic category as previously named items. Howard et al. (2006) investigated cumulative semantic interference by asking speakers to name consecutive pictures of objects from several semantic categories intermixed with filler items. The effect was shown to be cumulative and linear to the ordinal position of the items of a given category. Furthermore, Schnur et al. (2006) found semantic interference effects in older individuals and individuals with aphasia using a blocked-cyclic naming task. However, it remains unclear whether semantic interference has differential effects on younger and older individuals. According to previous research, semantic priming effects in word recognition are larger in older than younger individuals (Laver & Burke, 1993). If semantic priming and semantic interference effects are based on a common mechanism, we hypothesize that older adults will experience larger semantic interference effects than younger adults.

Methods

Sixty-nine participants weredivided into two age groups: 28 younger adults, (mean age: 29.9 years), and 41 older adults, (mean age: 67.3 years), which were not significantly different in education level (p=.57). Participants were asked to name 400 line drawings presented one at a time. Our dependent variable was latency. Our independent variables were subjects' age group, semantic category (animal vs miscellaneous), and ordinal position of items (1st to 5th exemplar from each category in the block).

Results

A three-way repeated measures ANOVA was conducted with semantic category and ordinal position as within-subjects factors and age group as a between-subjects factor. Older individuals were slower overall than younger individuals [F(1,67) = 8.53; p=.005] to name pictures. Longer naming latencies were obtained for animal pictures than miscellaneous pictures [F(1,67) = 7.47; p=.008]. A main effect for ordinal position was also found [F(4,268) = 2.57; p=.039]. A three-way interaction among the three independent variables was found [F(4,268) = 2.55; p=.039]; therefore, we conducted separate analyses for older and younger individuals. Older individuals showed a gradual increase in naming latencies depending on the ordinal position when naming animals, but not miscellaneous items [F(4,40) = 2.46; p=.047], and this effect was not observed in younger adults [F(4,27) = 2.09; p=.087] (see Figure 1).

Discussion

Our results indicate that older individuals experience semantic interference effects, although, in contrast with our prediction, this is not true for younger individuals. This result may be due to the unstructured nature of our task to

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test for this effect; therefore, a small effect is more likely not to be detected (the case of younger individuals).

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